



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/160,991

09/25/1998

TZYH-CHYANG CHERNG

6990

30743

7590

12/15/2009

WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.

11491 SUNSET HILLS ROAD

SUITE 340

RESTON, VA 20190

EXAMINER

PAYER, HWEI SIU CHOU

ART UNIT

PAPER NUMBER

3724

MAIL DATE

DELIVERY MODE

12/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/160,991

Applicant(s)

CHERNG ET AL.

Examiner

HWEI-SIU C. PAYER

Art Unit

3724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-15, 25, 26, 31, 38-44, 46 and 47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-15, 25, 26, 31, 38-44, 46 and 47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Action

Applicants' response filed on 10/13/09 has been entered. In light of applicants' argument, the restriction requirement dated 4/10/09 has been withdrawn. Currently, claims 2-15, 25, 26, 31, 38-44, 46 and 47 are pending.

Claims Rejection - 35 U.S.C. 103(a)

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-7, 10, 12-14, 31, 38-44, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker (U.S. Patent No. 3,952,179) in view of Murphy et al. (page 807 of "The Rapid Manufacture of Metallic Component by Laser Surface Cladding" cited in the IDS dated 8/25/1999) in view of Funkhouser et al. (U.S. Patent No. 5,449,536).

Baker discloses a method for manufacturing a cutting die (see Abstract), the cutting die including a cylindrical die body (10) and a cutting blade (14/22/23, see Figs.6-8) formed in a pattern (24/25, see column 4, lines 65-67) and integral with the die body (10) and extending outwardly from the die body (10).

Baker's cutting die is formed by depositing a blade material (12) having a hardness greater than that of the die body material (10) by use of a heat source, then continuing the depositing step along the entirety of the path, and finally machining (see Figs.4-8) the side surfaces of the deposited blade material (12) by electrical discharge machining (EDM, see column 1, lines 61-65 and column 3, lines 50-61), milling or grinding (see column 1, lines 61-65 and column 3, lines 50-61) to form the cutting blade (14/22/23) substantially as claimed.

The mere differences between Baker and the claimed invention reside in the form of the blade material and the type of the heat source for depositing the blade material onto the die body.

Murphy et al. teach the use of a laser beam as a heat source for cladding. Specifically, Murphy et al. teach cladding a hard material onto a mild steel substrate by heating the substrate with the laser beam to generate a melt pool on the substrate and applying a cladding powder into the melt pool to form a layer of deposit that is compositionally different and of greater hardness than the mild steel substrate. The cladding can be done with one single pass of the laser beam or a number of successive passes depending upon the thickness of the deposit desired (see Figs. 2 and 3).

Thus, it would have been obvious to one skilled in the art to modify Baker by using a well-known heat source such as the laser beam of Murphy et al. for cladding a hard material in a powder form onto the substrate to facilitate a better control of the geometry of the deposited clad bead and to alter the exact composition of the clad bead at any time during the cladding process as taught by Murphy et al.

Baker as modified above does not explicitly show the hard powder material being "melted in the puddle (or pool)", and it is not clear whether "an area of said puddle being greater than an area of said body on which said laser beam directly impinges".

Funkhouser et al. show a prior art laser cladding operation by forming a melt pool (32) in the surface of a substrate (35) and then injecting powder metal alloying material (33) in the melt pool so that the powder material (33) melts in the pool (see column 5, lines 61-68). Further, the area of puddle is greater than the area in which a laser beam directly impinges (see Fig.3), and the cladding powder is fed through a feeder that is coaxial with a beam of the laser (see column 6, lines 17-19).

Thus, it would have been obvious to one skilled in the art to further modify Baker by having the hard power material melted in the puddle/pool and by having the puddle larger than the area onto which the laser beam directly impinges for the advantage of a very fine microstructure and homogeneity of the clay layer and to facilitate a greater area of cladding metal powder onto the substrate, respectively as taught by Funkhouser et al.

Regarding the material for the hard powder, Murphy et al. state almost any metallic powder can be used as a cladding material. Note item (iii) on page 807 of Murphy et al. Therefore, to select a desired metallic powder such as the one comprises carbide would have been obvious to one skilled in the art.

With respect to claims 10 and 12, the claimed range for the hardness of the die body and of the carbide-containing blade material and the percentage of the tungsten carbide in the cladding power are not patentably distinct over Baker as modified, since

the blade material and the die body material selected depend more upon the blade performance criteria and the die body parameters (as evidenced by Applicant, note page 15 of the specification) than on any inventive concept.

Regarding claim 41, Baker's machined blade material (see Fig.6, 7 or 8) is deemed to be "approximate" a trapezoid with a tip thereon or it would have been obvious to one skilled in the art to have any shape of the blade material to suite one's particular cutting needs. Further, it has been held that change in shape is an obvious matter of engineering design choice and not patentably advanced. In re Dailey, 149 USPQ 47, CCPA 1966.

3. Claims 8, 9, 11, 15, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker (U.S. Patent No. 3,952,179) in view of Murphy et al. (page 807 of "The Rapid Manufacture of Metallic Component by Laser Surface Cladding" cited in the IDS dated 8/25/1999) and Funkhouser et al. (U.S. Patent No. 5,449,536) as applied to claims 10, 13, 38 and 43 above, and further in view of Cox et al. (U.S. Patent No. 5,417,132).

Baker as modified above shows the claimed method steps of forming a cutting die except it lacks the step of heat treating the blade.

Cox et al. teach heat treating blades by the use of a laser beam (see Abstract) after machining the cutting blades.

Therefore, it would have been obvious to one skilled in the art to further modify Baker by providing a heat treating step after the blade is machined to harden and prolong the life of the blade as taught by Cox et al.

Remarks

Applicant's arguments with respect to claims 2-15, 25, 26, 31, 38-44, 46 and 47 have been considered but are moot in view of the new ground(s) of rejection.

Point of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hwei-Siu C. Payer whose telephone number is 571-272-4511. The examiner can normally be reached on Monday through Friday, 7:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for official communications and 571-273-4511 for proposed amendments.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Art Unit: 3724

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

H Payer
December 9, 2009

/Hwei-Siu C. Payer/
Primary Examiner, Art Unit 3724